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| APPLICATION NO.                     | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------------|-------------|----------------------|---------------------|------------------|
| 09/030,710                          | 02/25/1998  | PETER C. CHEN        | M-3206-1C           | 7700             |
| 27498                               | 7590        | 07/28/2005           | EXAMINER            |                  |
| PILLSBURY WINTHROP SHAW PITTMAN LLP |             |                      | DINH, DUNG C        |                  |
| P.O. BOX 10500                      |             |                      | ART UNIT            |                  |
| MCLEAN, VA 22102                    |             |                      | PAPER NUMBER        |                  |

2152

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/030,710

Applicant(s)

CHEN, PETER C.

Examiner

Dung Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 4 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-10, 17-19, 21-28, 30-35 and 38-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 17-19, 21-28, 30-35, 38-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/13/2005 has been entered.

***Response to Arguments***

Applicant's arguments filed 5/13/2005 have been fully considered but they are not persuasive.

Regarding the 112 2nd of claims 24, 33 and 43, the term 'non-standard' renders the claims indefinite because the mete and bound of the term can not be determine. 'Non-standard' is a relative term and varies over time. One of ordinary skill in the art would not be apprised of the scope of the claim because the specification does not provide any criteria, and there is no known criteria in the art, to determine what/when a device or an interface is non-standard. (See MPEP 2173.05(b))

Regarding the art rejection, Applicant argued the reference to "whatis.com" is improper because it is dated after the

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present invention. The "whatis.com" reference is merely used as a dictionary for the definition of the term 'device driver'.

As Applicant stated, to appreciate the personal computing environment of April 1995 requires steps back in time. As Applicant pointed out in the argument, the prevalent operating system at the time was still DOS and Windows 95 was about to be introduced. DOS does not have 'device driver' in the meaning as current usage of the term. Device driver during the DOS era was built into the applications or as a Terminate and Stay Residence program (TSR). The application must be programmed with specific knowledge of the hardware to be used. The usage of standard device driver and isolation of the application from having to deal directly with the hardware in PC was introduced with the more modern operating systems OS/2 and Windows 3.1.

Suffern was filed in early 1993 followed a year later by Bailey. Suffern discloses a modem with reduced hardware that makes use of the host processing power essentially similar to the present invention. There is no mention of OS/2 or Windows or device driver in Suffern. Suffern clearly was still operating in DOS (see col.3 lines 5-10). Given the disclosure and example code provided by Suffern, one of ordinary skill in the art at the time of Suffern's invention would have been able to program his application to make use of Suffern's modem.

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A bit over a year later, Bailey filed the application for attaching a modem to the parallel port instead of the serial port. Bailey specifically discloses adapting his invention to work with modern operating systems (col.4 lines 1-10 - OS/2 and Windows). It is well known in the art at the time of the invention that Windows uses device drivers for controlling hardware in PC. Furthermore, Bailey specifically teaches providing a device driver and emulation of the UART so as to enable his modem to work with existing applications that expect communication to a modem through a serial interface [col.5 lines 29-31, col.13 lines 5-10, col.16 lines 24-36]. Hence, the usage of a device driver to make Suffern's modem work with existing applications running on these modern operating systems would have been clearly obvious to one of ordinary skill in the art at the time of the present invention.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 24, 33, 43 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 24, 33, and 43, the term "non-standard input/output interface" is indefinite. The term 'non-standard' is a relative term and varies over time. What might constitute as 'standard' or 'non-standard' by an industry also changes over time. Hence, what is included or excluded from the term "non-standard input/output interface" is indefinite. Furthermore, one of ordinary skill in the art would not be apprised of the scope of the claim because the specification does not provide any criteria, and there is no known criteria in the art, to determine what/when a device or an interface is non-standard. (See MPEP 2173.05(b))

Claim 47, it is unclear what is means by the second device occupies eight addresses on the local bus. The claim recite the second device include the local bus. The second device from the claim 47 and the specification is the computer. It is unclear what is meant by a computer occupies eight addresses on the local bus.

***Claim Rejections - 35 USC § 102***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless --*

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claim 46-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Bailey US patent 5,644,593.**

As per claim 46, Bailey teaches a protocol translator comprising:

a first device (modem) in communication using a first protocol (Parallel protocol- col.17 lines 23-27);

a second device (host computer) in communication with the first device via serial interface (UART) for communication using a second protocol (RS-232), wherein the second device includes a processor, local bus and memory (inherent in a PC), wherein the second protocol emulate at least a portion of a UART protocol (col.3 lines 11-15, col.5 lines 29-31, lines 43-47); and

a translation means (device driver) in communication with the first device and the processor, wherein the translation means designates portions of the memory to correspond to the output portion of the interface and another portion of memory to

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correspond to the input portion of the interface, such that communication between the first and second device is routed through the memory by the translation means (apparent from col.5 line 53 to col.6 line 6 - data buffer, and col.16 lines 23-26).

As per claim 47, the serial interface occupies eight I/O addresses. Hence, it is inherent to emulate the serial interface by occupies the same number of I/O addresses.

As per claim 48, Bailey teaches an application that communicate has routine to device comprising a UART [col.16 lines 23-24 - "application attempt to write to serial port"]. Furthermore, it is inherent that Windows has routine in memory for communicate with another device comprising UART (e.g. the actual serial port).

As per claim 49, Bailey teaches processing unit (the computer processor) and a driver (device driver) comprises a software UART [col.5 lines 27-31]; a software modem in communication with the software UART [col.5 lines 43-52], and input/output handler in communication with the software modem [inherent for the Windows operating system to communicate with it and to handle I/O interrupts].



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The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

Claims 1-2; 4, 6-9; 17-18, 23; 19, 21-22; 24-28; 30-32, 33, 35, 38-42, 43-45, 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suffern et al. US patent 5,646,983 and further in view of Bailey et al. US patent 5,644,593.

As per claim 1, Suffern teaches a system comprising:

a computer having a processing unit [fig.3 Microprocessor 22], a main memory [24] and a local bus [28];

a device [fig.3 interface card 15] coupled to the local bus, wherein the device occupies an I/O slot on the local bus [col.3 lines 25-30] and is accessible at a first set of addresses corresponding to a first communication port [see from col. 8 lines 15-18, since the device occupies addresses of one of the COM ports];

the device has a register set [fig.3 counter 70, control unit 50, latch 74,80,54 and shift register 43] different than a register set for a UART [since the device does not have convention

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processing and interface of a standard modem, its interface must be differ from a UART for a standard modem].

Suffern does not teach a communication driver with UART emulation as claimed. Suffern only discloses sample codes for interfacing to the device 15 and how to perform the DSP function using the computer's processor. Suffern does not disclose how to interface the device 15 such that the device 15 can be used by conventional application software and operating system.

Bailey discloses a method for enabling application software to communicate with a modem, connected in a non-standard way, by providing a device driver with UART (serial interface) emulation and redirecting the communication between the operation system and the modem [see col. 5 lines 29-31, col.13 lines 5-10, col.16 lines 24-36]. The UART emulation fools application software and operating system to see the modem as if it is connected to a conventional port [col.5 lines 45-48].

Hence, it would have been obvious for one of ordinary skill in the art to provide a communication driver with an UART emulation and communication redirection with Suffern device 15 because it would have enabled the communication driver to fool the application software and operating system into seeing the device 15 like a conventional modem. This would have enabled the device

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15 of Suffern to be used by existing application software and operating system.

As per claim 2, it is inherent that the local bus comprises an ISA bus since Suffern uses an IBM-compatible personal computer. ISA bus was well known and widely used at the time of the invention. Hence, it would have been obvious for one of ordinary skill in the art at the time of the invention to have ISA local bus because it would have maintained compatibility with large number of computers at that time.

As per claim 4, 7-8, they are rejected under similar rationale as for claim 1 above. Bailey teaches allocating memory of the computer for storing data corresponds to registers of a UART, transmitting and updating value in the storage locations [col.16 lines 23-36].

As per claim 6, it is apparent that the system as modified would have to have I/O handler for transferring data to/from the driver to the appropriate registers in the device 15 in order for the driver to communicate and transfer data between the computer and the device 15. It would have been obvious for one of ordinary skill in the art to have such I/O handler because it would have enable the device driver to handle I/O interrupts and data transfers between the host computer and the modem device.

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As per claim 9, it is inherent that the device 15 of Suffern is allocated a base address corresponding an I/O slot for a UART [col. 8 lines 15-18, since the device occupies addresses of one of the COM ports]. It would have been obvious for one of ordinary skill in the art to use I/O slot for a UART because it is convention to allocate modem I/O address to that of a UART (i.e. COM or Serial port).

As per claim 17, it is rejected under similar rationale as for claim 1 above.

As per claim 18, it is inherent from Bailey col.16 lines 23-35 that the serial port emulation would function the same way whether the access to the UART register is done directly by application software or by the operating system. It would have been obvious for one of ordinary skill in the art to emulate the UART such that it would be access the same way by the OS or the Application because it would have enable the modem to function with existing application programs that directly communicate to a modem instead of through the OS virtual driver.

As per claims 19, it is rejected under similar rationale as for claims 1. Bailey teaches allocating memory of the computer for storing data corresponds to registers of a UART, transmitting and updating value in the storage locations [col.16 lines 23-36].

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As per claims 21, Suffern teaches modem software that implements a conversion between data and digital samples representing a signal in accordance with a communication protocol [col.3 lines 45-68].

As per claims 22 and 23, Bailey does not disclosed the specific registers being emulated. However the recited registers: line control, status, and modem control are standard in a PC serial interface. Hence, it is apparent that the system as modified would have had emulated these registers in order to provide full compatibility to existing application software.

As per claims 24, and 30 Suffern teaches a device comprising an analog to digital converter coupable to a communication medium to receive an analog communication signal [fig.3, fig.4: device 15];

a computer comprising processing unit coupled to the device, to receive there from a plurality of sampled digital values, the processing unit being program with a software modem to determine data received, based on a waveform represented by the sample digital values [fig.4 Host computer 20, col.2 lines 6-10].

Suffern does not specifically disclose a device driver for transferring data between the device 15 and an operating system and enabling application software to use the device 15 in the same

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manner as a standard hardware modem. Bailey teaches a device driver that fools the operating system and application software to see a conventional modem. The obviousness rationale to combine Bailey's driver to Suffern device is as stated for claim 1 above.

As per claim 25, Bailey teaches allocating memory for registers of the emulated UART [col.16 lines 23-36].

As per claim 26, Suffern teaches modem software that implements a conversion between data and digital samples representing a signal in accordance with a communication protocol [col.3 lines 45-68].

As per claim 27, it is well known in the art that a device driver has I/O handler for transferring data from a device hardware register to the computer memory. It is inherent that Suffern as modified would have such an I/O handler in order to transfer data between the device 15 and the computer. It would have been obvious for one of ordinary skill in the art to have such I/O handler because it would have enable the device driver to handle I/O interrupts and data transfers between the host computer and the modem device.

As per claim 28, Suffern teaches analog-to-digital and digital-to-analog converters [see fig.4].

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As per claim 31, Suffern teaches using interrupts to reads and transfer data to the adapter card [see col.7 lines 1-10, col.8 lines 15-18].

As per claim 32, it is inherent that the data sent by the software modem to the adapter 15 would have carrier signal and data format according to a standard modem protocol in order to the device 15 of Suffern to function as a modem.

As per claims 33 and 43, Suffern teaches a system essentially as claimed having an I/O device with non-standard interface (modem without a processor and DSP) and a computer processing unit using software to process digital wave signal data from the device which is coupled to the local bus [col.3 lines 45-68]. Suffern does not specifically disclose driver for providing data to an operating system. It is well known in the art to provide a device driver to enable an operating system to communicate to an I/O device. The obviousness rationale is as stated for claim 1 above.

As per claims 35 and 44, Suffern teaches generating digital values and transmitting analog signal using digital-to-analog converter on the device [col.3 lines 60-68].

As per claim 38, it is rejected under similar rationale as for claim 1 above. Suffern teaches using the computer processor to perform modem DSP functions. Hence, Suffern as modified would have "software modem" for performing the modem DSP functions. It

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is well known in the art that a device driver has I/O handler for transferring data from a device hardware register into the computer. It would have been obvious for one of ordinary skill in the art to have such I/O handler because it would have enable the device driver to handle I/O interrupts and data transfers between the host computer and the modem device.

As per claims 39-42 and 45, it is apparent that the computer of Suffern has a second device with UART (it is well known in the art that the PC has two standard serial ports COM1 and COM2 each having a separate UART). The limitations recited are inherent in the computer of Suffern's system as modified.

As per claim 50, it is rejected under similar rationale as for claim 1 above.

As per claim 51, Bailey teaches the UART emulation in response to access to a register of a UART (col.16 line 23-25, application attempt write to the serial port), instead access the first memory portion (inherent the process of redirecting data - col.16 lines 25-27).

**Claims 3, 10, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Suffern et al. and Bailey and further in view of Gibson et al. US patent 5,640,594.**



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As per claim 3, Suffern does not specifically disclose a means in the device for assigning a base I/O address to be occupied by the device.

Gibson teaches a device couple to a local bus comprising:

a comparator [fig.4A #312];

a pattern generator [fig.4A SEQ(count)] coupled to the comparator;

a counter [fig.4A COUNT] operable couple to the comparator and the pattern generator;

a register [fig.4B #324 accept data for device programming] coupled to the counter to receive signal from the local bus in respond to the counter reaching a final state [fig.4A #316].

It would have been obvious for one of ordinary skill in the art to provide the means above in the modem device of Suffern because it would have enable the operating system to automatically assign I/O address to the device.

As per claims 10 and 34, it is rejected under similar rationale as for claim 3 above.

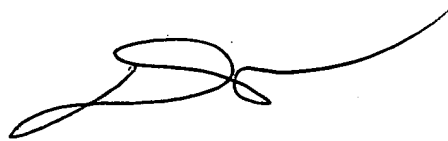
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh whose telephone number is (571) 272-3943. The examiner can normally be reached on Monday-Friday from 7:00 AM - 3:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (571) 272-3949.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke extending to the right.

Dung Dinh  
Primary Examiner  
July 25, 2005